

# Substitute Sequence Listing

<110> Vermeij, Paul

<120> Lawsonia intracellularis 26 kD subunit vaccine

<130> I-2003.023 US

<140>

<141>

<150> PCT/EP2004/053342

<151> 2004-12-08

<160> 2

<170> PatentIn version 3.3

<210> 1

<211> 856

<212> DNA

<213> Lawsonia intracellularis

<220>

<221> CDS

<222> (80)..(823)

<400> 1

|  |     |
|--|-----|
| atggctataa gcgattgaat aacagaaaat aacacctatg cctgaaattt tgcacgcgtc  | 60  |
| gaaattttta gaggaaacc atg aaa aaa cta ctc ctt ttg tta tct att ctg   | 112 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>Met</span><span>Lys</span><span>Lys</span><span>Leu</span><span>Leu</span><span>Leu</span><span>Leu</span><span>Leu</span><span>Ser</span><span>Ile</span><span>Leu</span> </div> <div style="display: flex; justify-content: space-around; font-size: x-small;"> <span>1</span><span>5</span><span>10</span> </div> |     |
| ttt cta acc cca agt att acc ttg gcg gaa ggt aat act ttc aat gat<br>Phe Leu Thr Pro Ser Ile Thr Leu Ala Glu Gly Asn Thr Phe Asn Asp   | 160 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>15</span><span>20</span><span>25</span> </div>   |     |
| agt ttc aac aag gct aag cgc ata ctg caa gat gag gtg tat tac gac<br>Ser Phe Asn Lys Ala Lys Arg Ile Leu Gln Asp Glu Val Tyr Tyr Asp   | 208 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>30</span><span>35</span><span>40</span> </div>   |     |
| cac caa gtt aca cta tac tgc gga tat gaa tat gat gac caa aaa agg<br>His Gln Val Thr Leu Tyr Cys Gly Tyr Glu Tyr Asp Asp Gln Lys Arg   | 256 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>45</span><span>50</span><span>55</span> </div>   |     |
| ata tgt ctc cct gat gga ttt ata gca gag aaa cat caa aaa aga tca<br>Ile Cys Leu Pro Asp Gly Phe Ile Ala Glu Lys His Gln Lys Arg Ser   | 304 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>60</span><span>65</span><span>70</span><span>75</span> </div>  |     |
| tat aaa att gag tgg gaa cat agt gtg cct gct gag aat ttt ggc aga<br>Tyr Lys Ile Glu Trp Glu His Ser Val Pro Ala Glu Asn Phe Gly Arg   | 352 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>80</span><span>85</span><span>90</span> </div>   |     |
| gct ttt act gaa tgg cgc gaa ggt cat cct ctt tgt gta gat aat aaa<br>Ala Phe Thr Glu Trp Arg Glu Gly His Pro Leu Cys Val Asp Asn Lys   | 400 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>95</span><span>100</span><span>105</span> </div>   |     |
| ggt aaa agt ttc aaa gga cga aaa tgt gca gaa aaa gta aat aaa aca<br>Gly Lys Ser Phe Lys Gly Arg Lys Cys Ala Glu Lys Val Asn Lys Thr   | 448 |
| <div style="display: flex; justify-content: space-around; font-size: small;"> <span>110</span><span>115</span><span>120</span> </div>  |     |

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|            |            |     |     |     |     |     |     |     |     |     |     |     |            |     |     |     |
|------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|-----|-----|-----|
| tat        | aga        | tat | atg | cag | tct | gat | atg | tac | aat | ttg | ttt | cca | gca        | gtc | ggg | 496 |
| Tyr        | Arg        | Tyr | Met | Gln | Ser | Asp | Met | Tyr | Asn | Leu | Phe | Pro | Ala        | Val | Gly |     |
| 125        |            |     |     |     |     | 130 |     |     |     |     | 135 |     |            |     |     |     |
| tct        | gtc        | aat | gct | gcg | aga | agc | aat | aag | caa | tac | tca | gag | tta        | ctt | gga | 544 |
| Ser        | Val        | Asn | Ala | Ala | Arg | Ser | Asn | Lys | Gln | Tyr | Ser | Glu | Leu        | Leu | Gly |     |
| 140        |            |     |     |     | 145 |     |     |     |     | 150 |     |     |            |     | 155 |     |
| gtt        | caa        | tct | gct | ttt | gga | acg | tgt | gag | gca | aaa | ata | gat | ggg        | aat | aga | 592 |
| Val        | Gln        | Ser | Ala | Phe | Gly | Thr | Cys | Glu | Ala | Lys | Ile | Asp | Gly        | Asn | Arg |     |
|            |            |     |     | 160 |     |     |     |     | 165 |     |     |     |            | 170 |     |     |
| ttc        | gaa        | cca | ccg | gat | aga | gct | aaa | ggg | caa | gta | gcc | cgt | gct        | gct | ctt | 640 |
| Phe        | Glu        | Pro | Pro | Asp | Arg | Ala | Lys | Gly | Gln | Val | Ala | Arg | Ala        | Ala | Leu |     |
|            |            |     | 175 |     |     |     |     | 180 |     |     |     |     | 185        |     |     |     |
| tat        | atg        | gat | aaa | gag | tac | aag | gaa | tac | aat | cta | agt | cgt | cag        | caa | aga | 688 |
| Tyr        | Met        | Asp | Lys | Glu | Tyr | Lys | Glu | Tyr | Asn | Leu | Ser | Arg | Gln        | Gln | Arg |     |
|            |            | 190 |     |     |     |     | 195 |     |     |     |     | 200 |            |     |     |     |
| aga        | ctt        | ttt | gag | gct | tgg | agt | aat | atg | tat | cca | gtc | gat | gaa        | tgg | gag | 736 |
| Arg        | Leu        | Phe | Glu | Ala | Trp | Ser | Asn | Met | Tyr | Pro | Val | Asp | Glu        | Trp | Glu |     |
|            | 205        |     |     |     |     | 210 |     |     |     |     | 215 |     |            |     |     |     |
| tgt        | aca        | cga | gcc | aaa | cga | atc | gaa | tct | ata | cag | gga | aat | gaa        | aat | att | 784 |
| Cys        | Thr        | Arg | Ala | Lys | Arg | Ile | Glu | Ser | Ile | Gln | Gly | Asn | Glu        | Asn | Ile |     |
| 220        |            |     |     |     | 225 |     |     |     |     | 230 |     |     |            |     | 235 |     |
| ttt        | gta        | aaa | aat | atg | tgt | atc | gaa | aag | ggg | tta | tgg | taa | acaaacgagg |     |     | 833 |
| Phe        | Val        | Lys | Asn | Met | Cys | Ile | Glu | Lys | Gly | Leu | Trp |     |            |     |     |     |
|            |            |     |     | 240 |     |     |     |     | 245 |     |     |     |            |     |     |     |
| acaatataaa | tactacctaa | gta |     |     |     |     |     |     |     |     |     |     |            |     |     | 856 |

<210> 2  
 <211> 247  
 <212> PRT  
 <213> Lawsonia intracellularis

<400> 2

Met Lys Lys Leu Leu Leu Leu Ser Ile Leu Phe Leu Thr Pro Ser  
 1 5 10 15

Ile Thr Leu Ala Glu Gly Asn Thr Phe Asn Asp Ser Phe Asn Lys Ala  
 20 25 30

Lys Arg Ile Leu Gln Asp Glu Val Tyr Tyr Asp His Gln Val Thr Leu  
 35 40 45

Tyr Cys Gly Tyr Glu Tyr Asp Asp Gln Lys Arg Ile Cys Leu Pro Asp  
 50 55 60

Gly Phe Ile Ala Glu Lys His Gln Lys Arg Ser Tyr Lys Ile Glu Trp  
 65 70 75 80

Glu His Ser Val Pro Ala Glu Asn Phe Gly Arg Ala Phe Thr Glu Trp  
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85

90

95

Arg Glu Gly His Pro Leu Cys Val Asp Asn Lys Gly Lys Ser Phe Lys  
100 105 110

Gly Arg Lys Cys Ala Glu Lys Val Asn Lys Thr Tyr Arg Tyr Met Gln  
115 120 125

Ser Asp Met Tyr Asn Leu Phe Pro Ala Val Gly Ser Val Asn Ala Ala  
130 135 140

Arg Ser Asn Lys Gln Tyr Ser Glu Leu Leu Gly Val Gln Ser Ala Phe  
145 150 155 160

Gly Thr Cys Glu Ala Lys Ile Asp Gly Asn Arg Phe Glu Pro Pro Asp  
165 170 175

Arg Ala Lys Gly Gln Val Ala Arg Ala Ala Leu Tyr Met Asp Lys Glu  
180 185 190

Tyr Lys Glu Tyr Asn Leu Ser Arg Gln Gln Arg Arg Leu Phe Glu Ala  
195 200 205

Trp Ser Asn Met Tyr Pro Val Asp Glu Trp Glu Cys Thr Arg Ala Lys  
210 215 220

Arg Ile Glu Ser Ile Gln Gly Asn Glu Asn Ile Phe Val Lys Asn Met  
225 230 235 240

Cys Ile Glu Lys Gly Leu Trp  
245